

PLANTAE KRUKOVIANAE - III

H. A. Gleason

The species described below were collected by Mr. B. A. Krukoff on his fourth expedition to Brazilian Amazonia. The types are deposited in the herbarium of the New York Botanical Garden and are duplicated in several other herbaria.

*RYANIA SAURICIDA* Gleason, sp. nov. Arbor parva 6 m. alta ramulis gracillimis angulatis glabris; petioli 2-3 mm. longi breviter stellato-pilosi; laminae membranaceae, oblongae vel elliptico-oblongae, 10-18.5 cm. longae, 4-6 cm. latae, acuminatae et breviter mucronatae, integrae, basi acutae, utrinque glaberrimae, venis lateralibus in utroque latere ca. 7 curvato-adscentibus, venulis utrinque creberrime reticulatis et paulo elevatis; stipulae persistentes setaceae 5-7 mm. longae breviter hispidulae; pedicelli in axillis solitarii ca. 5 mm. longi curvati crassi angulati tomentosi, pilis stellatis fuscis; flores jam immaturi; calyx in alabastro inaperto 10 mm. longus anguste conicus acutus, dense fusco-stellato-tomentosus; filamenta nondum elongata; antherae anguste lineares jam usque ad 5 mm. longae basi sagittatae apice mucrone 0.5 mm. longo ornatae; ovarium sessile ovoideum densissime hirsutum; stylus crassus glaber 3.5 mm. longus (verisimiliter in floribus maturis longior) apice brevissime 6-fidus, stigmatibus 6 carnosus rotundatis.

Type, Krukoff 5815, from Sepatini, on the Purus River, Amazonas. It inhabits the "restinga alta," just above the varzea land above water at most time of the year.

The genus *Ryania* apparently contains about ten species. In *R. Riedeliana* and *R. Sagotiana* the ovary is stipitate; in *R. canescens* and *R. Mansoana* the leaf is tomentose beneath; in *R. dentata* the short anthers are not mucronate; in *R. Candollei*, *chocoensis*, *speciosa*, and *stipularis* the leaves are pubescent beneath and usually rounded at the base. The remaining species, *R. acuminata* Spruce, appears to be most closely similar to ours, but differs in its smaller and proportionately narrower leaves, which are more narrowly acute at the base. The bark of *R. sauricida* is used by Indians for poisoning alligators, whence the specific name.

*TRICHILIA KRUKOVII* Gleason, sp. nov. Sect. *Moschoxylum*: arbor excelsa gracilis 25 m. alta; folia alterna breviter petiolata tota longitudine usque ad 17 cm. metientia, rhach-

ide supra canaliculato minutissime puberulo; foliola subcoriacea, anguste elliptico-oblongata 8--12 cm. longa 2.5--4 cm. lata (infima multo breviora), abrupte acuminata, apice ipso obtuso, integra, basi longe cuneata, supra glabra subtus minutissime pubescentia, venis secundariis utroque latere ca. 12 leviter curvato-ascendentibus supra planis subtus elevatis; paniculae confertae ramosae rhachidem foliorum aequantes vel dimidio excedentes, strigulosae, bracteolis triangulari-ovatis arcte adpressis strigosulis acutis 0.5--0.8 mm. longis; pedicelli veri crassi 0.5--1 mm. longi; flores 4-meri; calyx gamosepalus 3 mm. diam., ad medium in lobos 4 late rotundatos vel truncatos fissus, extra leviter strigosulus; corolla ad anthesin 6 mm. diam., extra parce strigosa, petalis carnosus recurvo-patulis triangulari-ovatis acutis 3.5 mm. longis; staminum tubus erectus 1.6 mm. altus 3.2 mm. diam., extra tenuissime puberulus intus breviter villosus, margine breviter 16-denticulatus, dentibus 8 alternis setaceo-subulatis erectis 1 mm. longis parce villosulis; antherae 8 sessiles anguste triangulares 1 mm. longae; discus carnosus obscure 8-gibbosus, cum ovario late ovoideo 0.7 mm. longo dense pubescens; ovarium 2-loculare, ovulis in quoque loculo 2 ex apice collateraliter pendentibus; stylus crassus erectus glaber 0.8 mm. longus, stigmatibus subcapitato integro; capsula bivalva atropurpurea (tantum in sicco) anguste obovoidea 15--18 mm. longa, valvis post maturitatem divergentibus recurvatis et arcte involutis; arillus ruber.

Type, Krukoff 4711, collected on varzea land at the mouth of the Embira River, Jurua Basin, Amazonas.

The species is most closely related to Trichilia Cipo (Juss.) O.DC., as illustrated by Spruce 2237 from the Rio Negro. De Candolle's description, in fact, indicates very little by which the two might be separated, but a dissection of the Spruce specimen shows that the anthers are distinctly ovoid and just half as long (0.5 mm.) and that the subulate teeth of the staminal tube are only a fifth as long (0.2 mm.) as in our plant. The fruits of T. Krukovii are regularly 2-valved, according to the collector, and we are not acquainted with any other species in which the valves become recurved and involute.

**BIXA EXCELSA** Gleason & Krukoff, sp. nov. Arbor 30-metralis trunco gracili; petioli graciles glabri longitudine inter 25 et 70 mm. variables; laminae subcoriaceae utrinque glabrae et virides ovatae 10.5--19 cm. longae 4.5--9 cm. latae, sensim longe acuminatae, basi late obtusae subrotundatae vel rarissime subtruncatae nunquam cordatae, 5-nerviae venulis utrinque reticulatis parum elevatis; stipulae jam delapsae; flores nobis ignoti; panicula fructifera ut videtur 15 cm. longa ramis crassis patulis apice minutissime tom-

entellis; capsula ferruginea reniformis lateraliter paulo compressa 45 mm. lata 30 mm. longa, pericarpio extra dense ferrugineo-tomentosa pilis apice glanduliferis, aculeis patulis rigidis 2--8 mm. longis infra medium ferrugineo-tomentosis dense oblecto; semina complanata obovato-oblonga 4.5 mm. longa 3 mm. lata, praeter chalazam flavescens castanea, raphe leviter costata, funiculo elongato apice valde dilatato semen ad quartam partem tegente.

Type, Krukoff 4960, collected June 21, 1933, in a high forest on terra firma near the mouth of the Rio Embira, Jurua basin, Amazonas.

Bixa Orellana L., the common species of pantropic cultivation, is so widely distributed and so variable in tropical America that ample justification must be sought for the description of a new species. In examination of numerous specimens of B. Orellana, the fruit is found to be flattened ovoid, distinctly tapering to the summit, with smooth pericarp and thorns; the leaves vary from truncate to subcordate at base and are in most cases distinctly marked beneath with minute pits which appear black under the lens. Variations in most of these points may be discovered, especially in the absence of pits, but no specimens have been seen with the least trace of glandular hairs on the pericarp or with such a broadly reniform capsule. Our species differs also in the strongly flattened seeds and costate raphe.

Bixa urucurana Willd., considered by Pilger as merely a variety of B. Orellana and the same as B. sphaerocarpa Triana and B. platycarpa R. & P., has leaves scaly beneath; its capsules approach ours in shape but are spherical. Glandular pubescence is not mentioned in its description, while in our species it is so conspicuous that it could scarcely be overlooked, even in the most casual observation.

In Bixa arborea Huber the capsules are described as rugose and minutely papillose under the lens, not aculeate, and 4-costate at base. The chalaza is white surrounded by a narrow zone of red and the body of the seed is blue. Its leaves are rounded at base and firm as in our species.

Bixa Orellana is regularly a low spreading tree rarely more than 8 m. tall. Bixa arborea is said to reach a height of 15 m.; apparently it is also stout and widely spreading, since its trunk is 20-30 cm. in diameter. Bixa excelsa is a slender tree with the typical shape of many other species of the rain forest, being only 23 cm. in diameter near the base when nearly 30 meters tall.

HENRIETTELLA SYLVESTRIS Gleason, sp. nov. Arbor mediocris 15 m. alta; rami superiores graciles primum dense strigosi, pilis conicis subulatis, demum glabrescentes; petioli 1--2 cm. longi graciles subtus strigosi supra breviter hispidi;

laminae obovato-oblongae chartaceae, usque ad 14 cm. longae 7.5 cm. latae, abrupte et obtuse acuminatae, integrae, basi acutae vel obtusae, 5-plicatae, subtus ad venas venulasque breviter strigosae, inter venas scabrae pilis erectis brevibus conicis. supra scabra, ad costam breviter hispidae et sub epidermide lineis brevibus crystallos lineares tegentibus dense notatae; flores 5-meri ad nodos defoliatos 2--5 in fasciulis sessilibus, pedicellis gracillimis 5--10 mm. longis fere glabris; hypanthium parvum glabrum in fructo immaturo 3.7 mm. longum; calycis tubus 0.2 mm. longum, lobi late rotundati, 1.7 mm. lati, a toro 0.5 mm. longi, dentibus exterioribus minutis verruciformibus; petala et stamina adhuc ignota.

Type, Krukoff 5272, collected on terra firma at the mouth of the Rio Macauhan, Acre Territory.

More than half of the South American species of the genus have sessile or subsessile flowers, and of the seven with pedicelled flowers all but one have smooth leaves. This one is H. towarensis Cogn., a Venezuelan species with scabrous hypanthium and completely different pubescence.

H. sylvestris seems to be common and widely distributed in western Amazonia. Specimens collected along the Amazon River by Williams (1717, 1736, 1864, 2091, 2972) were once identified by me as H. verrucosa Triana. It also extends up the Andes to at least 600 m. (Macbride 5493).

BERNOULLIA SWIETENIOIDES Gleason, sp. nov. Arbor excelsa 55 m. alta, 1.35 m. in diametro; ramuli minores cinerei tenuiter rugoso-costati; folia unifoliolata; petioli graciles 35-70 mm. longi, basi apiceque paullo incrassati et corrugati vel transversim incisi; laminae foliolorum firmulae late obovato-oblongae vel ellipticae, basi rotundatae, utrinque glabrae, penninerviae, nervis secundariis utroque latere circa 7 ascendentibus leviter arcuatis, nervulis tenuiter reticulatis; inflorescentia et flores ignoti; pedunculus fructiferus 3 dm. longus ut videtur uniflorus; capsula fusiformis fusca glabra, ad apicem obtusum angustata, basi obtusa, 20 cm. longa 7 cm. in diam., ad maturitatem in valvas 5 loculicide dehiscens, 5-ocularis; pericarpium crassum lignosum ab endocarpio papyraceo diremptum et dissepimenta papyracea ut in Swietenia; columella papyracea 5-alata ad apicem pedunculi persistens; semina in quoque loculo in seriebus 2 longitudinalibus disposita, in quoque seriei ca. 7, atrocastanea triangularia, ala suberosa 6 cm. longa 15 mm. lata more Swieteniae ornata, quorum 3 basalia superne alata et ascendentia sunt et 4 apicalia alis pendentibus gaudent; cotyledones valde contorti et plicati.

Type, Krukoff 5609, collected on terra firma at Foz do Macauhan, Purus River basin, Acre Territory. The tree has



very high buttress roots, according to Mr. Krukoff.

Few, if any, of the plants recently brought back from Brazil by Mr. Krukoff have as great an interest to the taxonomist as the tree described above. The family to which it belongs remains in question. There is little doubt as to the genus to which it is most closely related and in which it is here placed, but a study of the flowers, as yet unknown, may indicate that it deserves the erection of a new genus.

The genus *Bernoullia* was proposed by Oliver in 1876, based on a specimen from a tall tree in Guatemala. This plant, illustrated in Hooker's *Icones*, pl. 1169, 1170, was in bloom; the figure of the fruit was taken from a "careful drawing" sent by the collector. The accompanying notes indicate that the fruit is almost indehiscent and the drawing a woody endocarp and dissepiments. The fruit of ours suggests a woody endocarp and dissepiments. The fruit of ours is so extraordinarily like that of the mahogany and so different from that of the Guatemalan plant that another genus is at once suggested.

*Bernoullia* was described in the Sterculiaceae; Schumann, in the *Natürlichen Pflanzenfamilien*, classed it in the Bombacaceae. Bakhuizen keeps it in that family but suggests that it belongs in the Sterculiaceae instead. Dr. A. J. Panshin, of the New York State College of Forestry, suggests Sterculiaceae on the evidence of its wood structure.

*DICLIDANTHERA OCTANDRA* Gleason, sp. nov. Frutex 3 m. altus; rami superiores recti glabri subteretes; ramuli floriferi valde divergentes primum tenuiter pubescentes angulati demum subglabri subteretes; petioli 5-8 mm. longi mox glabri; laminae firmulae elliptico-oblongae usque ad 13 cm. longae 6 cm. latae, superiores minores, integrae, basi apiceque obtusae, glabrae (juniores supra ad costam minutissime puberulae), penninerviae, nervis adscendentibus ramosis ca. 8 utroque latere, venulis arcte reticulatis utrinque prominulis; spicae ex axillis superioribus solitariae adscendentes vel suberectae tenuiter pubescentes demum 7 cm. longae; flores sessiles inferne dissiti (in specimine nostro jam delapsi) superne conferti; sepala fere ad basin distincta, oblan- ceolato-oblonga 6.5-7 mm. longa apice rotundata arcte puberula vel tomentella, ad anthesin paulo involuta; corollae tubus 11-12 mm. longus subcarnosus hinc inde pilosulus fere cylindraceus superne paulo ampliatus, lobis 5 patulis vel subrecurvatis obovatis 3.5-4 mm. longis; stamina 8; filamenta isomorpha ad faucem tubi inserta complanata carnosula 1 mm. longa; antherae rotundatae basifixae introrsae 4-locellatae, thecis 2 exterioribus majoribus, 3 ad letere unum corollae 0.8 mm. longae fertiles, 5 gradatim minores usque

0.4 mm. longae et verisimiliter steriles vel substeriles; ovarium superum ovoideum 5-loculare, ovulo in quoque loculo 1 axiali; stylus cylindraceus villosus 3 mm. longus (in alabastro; fortasse ad anthesin longior), stigmatibus capitato 0.9 mm. diametro.

Type, Krukoff 5778, collected in terra firma near the mouth of the Rio Macauhan, Acre Territory.

The herbarium of the New York Botanical Garden contains type or authentic material of all three hitherto known species of Diclidanthera. D. octandra differs distinctly from all of them in habit and foliage and most notably in the presence of only 8 stamens. In its general aspect and in all other structural features it is clearly a Diclidanthera. Because of the limited material, it has not been practicable to determine whether the three large anthers are posterior or anterior. The two gaps in the circle of ten lie between the petals.

Barnhartia Gl., referred by me originally, together with Diclidanthera, to the Styracaceae, has since been transferred to the Polygalaceae. Barnhartia also has eight stamens, but the petals are separate and the ovary 2-celled. Our plant unites the staminal features of this genus with the gamopetalous corolla and 5-celled ovary of Diclidanthera and undoubtedly represents a connecting link between the two.

Diclidanthera has been segregated from the Styracaceae for apparently good reasons. Barnhartia has been placed in the Polygalaceae after careful study by competent botanists. Its relationship to Diclidanthera is admitted. The discovery of such an intermediate type as D. octandra seems to justify the union of the two genera in the same family, whether it be Polygalaceae or Diclidantheraceae.